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Adolescent and young adult recreational, occupational, and transportation activity: Activity recommendation and weight status relationships

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Abstract

Purpose—Physical activity can occur in many settings, or domains, including recreation, occupation, and transportation. We described patterns of adolescent and young adult (YA) activity in each domain, and the extent that accounting for different domains impacts activity recommendation adherence. We also examined activity domain associations with weight status.

Methods—We examined physical activity among 11,157 adolescents and YAs in recreational, occupational, and transportation domains in the 2007–2016 National Health and Nutrition Examination Survey. We calculated proportions meeting weekly activity recommendations (adolescents: 420 minutes; YAs: 150 minutes) by domain. We compared adjusted odds of performing any activity in each domain by weight status. All estimates are weighted and stratified by age (adolescents: 12–19 years; YAs: 20–29 years) and sex.

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Results—Most adolescents (90.9%) and YAs (86.7%) reported activity in at least one domain. Recreational activity accounted for an average of 60.2% (adolescents) and 42.5% (YAs) of an individual's total activity. Approximately half of YAs (50.2%) reported any occupational activity, which accounted for 44.6% (males) and 37.4% (females) of total activity minutes. Transportation accounted for 18.1% (adolescents) and 16.2% (YAs) of total activity. Activity recommendation adherence estimates increased when adding domains: recreation alone (34.9% adolescents, 45.6% YAs); recreation and occupation (47.2% adolescents, 68.7% YAs); and recreation, occupation, and transportation (53.5% adolescents, 74.7% YAs). Weight status was generally not associated with activity domains.

Conclusions—Adolescents and YAs accumulate substantial occupational and some transportation-related physical activity, resulting in more youth meeting activity recommendations when accounting for these activity domains than recreation alone.

Keywords

Physical activity; Adolescent; Young Adult; National Health and Nutrition Examination Survey; Recreation; Occupational activity; Physical activity domains; Physical activity recommendations

As children reach adolescence and young adulthood, they become less physically active.¹ Suboptimal proportions of adolescents and young adults (YAs) meet recommended levels of physical activity.² National guidelines, such as the US Department of Health and Human Services Physical Activity Guidelines for Americans and the American Heart Association (AHA) 2020 Impact Goals, recommend adolescents achieve at least 60 minutes of moderate or vigorous physical activity (MVPA) daily and adults perform 150 minutes of MVPA weekly.^{3,4}

Physical activity can occur in many settings, which are often classified as activity domains.⁵ Surveys frequently query recreational activity alone^{5,6} (e.g., sports or exercise during leisure time). However, physical activity can also occur at work or home, or during transportation. Occupational physical activity can include lifting, carrying, walking, or digging during the course of employment or domestic tasks.⁷ Prior evaluations of occupational activity in adolescents and adults have suggested different impacts on health and different activity levels by sex.^{8–10} Children, adolescents, and YAs are also often active during transportation when walking or riding a bike to school or work. Transportation activity has been associated with increased physical activity estimates, but associations with weight status are less clear in US children and adolescents.^{11,12} The recreational, occupational, and transportation domains of physical activity captured in surveys may affect population-level estimates of both physical activity patterns and adherence to activity recommendations among adolescents and YAs.

Understanding and improving physical activity levels in adolescents and YAs has implications over the lifespan, including activity levels in adulthood.¹³ Physical activity levels have also been correlated with body mass index (BMI) and other cardiometabolic outcomes.^{13,14}

Activity in the various domains may have different health effects, including those related to obesity.^{15,16} Our study objective was to describe patterns of physical activity in adolescents and YAs across recreational, occupational, and transportation activity domains, and to characterize the extent to which estimates of meeting physical activity recommendations change when accounting for various activity domains. We also examined activity domain associations with weight status, as a key health indicator.

Methods

Data source and population

We analyzed data from the National Health and Nutrition Examination Survey (NHANES) for years 2007–2016. The NHANES is a stratified, multistage probability sample of the civilian, non-institutionalized US population. We used publicly available data from the in-home interview, as well as survey and physical examination data collected at Mobile Examination Centers, including measured height and weight.¹⁷

Adolescents and YAs aged 12–29 years were included in the analysis. Pregnant YAs at the time of survey were excluded due to associated physiologic changes (e.g., weight change) and differences in physical activity patterns and recommendations¹⁸; adolescent pregnancy NHANES data were not publicly reported during the study time period.¹⁹

Measures

Starting in 2007, the NHANES Physical Activity Questionnaire was based on the World Health Organization (WHO) Global Physical Activity Questionnaire.²⁰ Within NHANES, participants age 12 years and older reported whether they ever perform ten-minute bouts of moderate and/or vigorous intensity activity in three domains: recreation, occupation, and transportation.²¹ For activity in each domain, participants reported the average number of days per week performing that activity and the average daily duration of activity on days they were active in that domain.

Recreational activities include “sports, fitness, or recreational activities” of moderate (e.g., “activities that cause a small increase in breathing or heart rate such as brisk walking, bicycling, swimming, or golf”) and vigorous (e.g., “activities that cause large increases in breathing or heart rate like running or basketball”) intensity. For occupational activities (defined as “the things that you have to do such as paid or unpaid work, studying or training, household chores, and yard work”), moderate activity was defined as “activity that causes small increases in breathing or heart rate such as brisk walking or carrying light loads for at least 10 minutes continuously.” Vigorous occupational activity was defined as “activity that causes large increases in breathing or heart rate like carrying or lifting heavy loads, digging or construction work for at least 10 minutes continuously.” Transportation activity, without determination of intensity, included time people “walk or use a bicycle for at least 10 minutes continuously to get to and from places,” such as work, shopping, or school. The following is an example set of questions for vigorous occupational activity: Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like carrying or lifting heavy loads, digging or construction work for at least 10 minutes

continuously?; (2) In a typical week, on how many days do you do vigorous-intensity activities as part of your work?; (3) How much time do you spend doing vigorous-intensity activities at work on a typical day?

Adolescents 12–15 years of age responded to the questionnaire as part of the Mobile Examination Center visit, without parental assistance. All older adolescents and YAs responded as part of the in-home questionnaire, also without parental assistance.

BMI was used to determine weight status, and was calculated using height and weight data.²² For adolescents younger than age 20 years, BMI percentiles were used.²³ Individuals were classified as underweight, normal weight, overweight, obese (Class I), and severely obese (Class II+), per the Centers for Disease Control and Prevention.^{22,23}

Covariates examined include sociodemographic data: age, race/ethnicity (Non-Hispanic White, Non-Hispanic Black, Mexican-American, Other Hispanic, and Other/Multiracial), family income (<\$35,000; \$35,000–\$54,999; \$55,000–\$74,999; \$75,000–\$99,999; >\$100,000), health insurance status (uninsured, public insurance, private insurance), and education level (for adults age >20 only; no high school, some high school, high school graduate, some college, college graduate), as well as survey cycle.

Analysis

Patterns of physical activity in different domains among adolescents and YAs

—Nationally representative physical activity estimates in each domain and 95% confidence intervals were calculated, stratified by age group (adolescents age 12–19, YAs age 20–29) and sex. First, the percentage of adolescents and YAs who reported any bouts of MVPA in each domain was calculated. Second, among the subset of individuals who reported any MVPA in a particular domain, the mean weekly minutes of MVPA in that domain was calculated. For each domain, we present these two estimates to facilitate simultaneous interpretation of inactivity and activity levels in the sample population.

The relative degree to which each activity domain contributed to participants' total activity profile was also assessed. Among all individuals (including those who performed no MVPA in one or more domains), the ratio of weekly duration in each domain compared to total duration in all domains was calculated as a percentage of the total combined duration of MVPA. We present the mean percentage of personal total MVPA duration represented by each activity domain.

Physical activity recommendation adherence when accounting for different activity domains

—The primary outcome in these analyses was the percentage of adolescents and YAs classified as meeting the physical activity recommendations for their age group (420 weekly minutes MVPA for adolescents, 150 weekly minutes MVPA for YAs).^{3,4,24} Adolescent activity recommendations were applied to those under 20 years of age, to align with the AHA guidelines for ideal cardiovascular health,²⁴ the distinct definitions of weight status for those younger and older than 20 years old,^{22,23} the WHO definition of adolescence,²⁵ and the NHANES survey design that asked questions differently for those below and above age 20 (i.e., pregnancy status, education level).¹⁹ The extent to

which estimates of adherence to these guidelines differ when accounting for various domain measures was assessed by comparing percentages of adolescents and YAs meeting recommendations when accounting for the following activity domains: recreational activity alone, combination of recreational and occupational activity, and combination of recreational, occupational, and transportation domains. The percentage of participants meeting recommendations in different combinations were compared to recreation alone using a Wald test.

Association of physical activity domain with weight status—Associations of weight status with the likelihood of reporting any MVPA in each domain were assessed with logistic regression models. Models controlled for age, race/ethnicity, family income, health insurance status, education level, and survey cycle. Additional logistic regression models controlling for the same factors tested the association of weight status with the likelihood of meeting weekly activity recommendations when accounting for different activity domain combinations.

All estimates presented are weighted per NHANES Mobile Examination Center weights. Analyses are presented stratified by age group and sex. Consistent with recommendations, we do not adjust for multiple comparisons.²⁶ Each predetermined comparison has an independent null hypothesis, and all comparisons selected prior to analysis are presented. All analyses were performed using the Stata software package StataCorp, College Station, Texas. This study was deemed exempt by the Duke Institutional Review Board.

Results

Table 1 presents demographic characteristics of the 11,157 participants included in the analysis, who represent 8,251,591 non-institutionalized US adolescents and YAs. The population was 48.5% female and 51.5% male, and included 45.1% adolescents aged 12–19, and 54.9% YAs aged 20–29.

Patterns of physical activity in different domains among adolescents and YAs

Adolescents and YAs reported physical activity across the various domains (Table 2). Most adolescents (90.9%) and YAs (86.7%) reported activity in at least one domain. Adolescent and YA males generally reported more activity across domains compared to females. While adolescents were more likely to report any recreation and transportation activity, YAs were more likely to report any occupational activity.

The majority of adolescents (84.5% males, 72.8% females) and YAs (69.7% males, 60.6% females) reported some recreational activity with mean minutes per week ranging from 340 in YA females to 547 in adolescent males. Recreational activity accounted for an average of 60.2% (adolescents) and 42.5% (YAs) of an individual's total activity.

Approximately half of YAs (50.2%) reported any occupational activity compared to 42.9% of adolescents. Among those reporting occupational activity, the average number of minutes per week was higher in YAs (1,104 minutes) than in adolescents (485 minutes). Among YAs, occupational activity accounted for 44.6% of total minutes of activity among males and

37.4% among females. Occupational activity among YAs accounted for a comparable portion of total activity to recreational activity (41.3% occupational, 42.5% recreational). Occupational activity represented a smaller proportion (21.7%) of adolescents' total activity.

Transportation activity was reported by more adolescents (42.9%) than YAs (34.2%). Among adolescents and YAs reporting any transportation activity, YAs reported greater average weekly minutes (316 minutes) than adolescents (214 minutes). Transportation activity was the smallest proportion of adolescent and YA total activity in both sexes.

Physical activity recommendation adherence when accounting for different activity domains

Figure 1 illustrates physical activity recommendation adherence when accounting for different combinations of physical activity domains. Overall, the proportion of adolescents adhering to physical activity recommendations was 34.9% (95% CI 33.1, 36.7) when accounting for recreational activity alone, 47.2% (95% CI 45.1, 49.2) when accounting for recreational and occupational activity, and 53.5% (95% CI 51.6, 55.4) when accounting for recreational, occupational, and transportation activity ($P < 0.001$). YA adherence to recommendations was also greater when additionally accounting for occupational and transportation activity domains: 45.6% (95% CI 43.2, 48.0) recreation alone; 68.7% (95% CI 67.0, 70.5) recreation and occupational; and 74.7% (95% CI 72.9, 76.5) recreation, occupation, and transportation ($P < 0.001$). Occupational activity accounted for the largest increase in the estimated proportions meeting recommendations, particularly among YAs. Notably, overall proportions of YA adherence to physical activity recommendations were higher than adolescents because of the lower recommended level of activity for YAs (i.e., 420 weekly minutes MVPA for adolescents; 150 weekly minutes of MVPA for YAs).

Association of physical activity domain with weight status

Associations between reporting activity in any domain and weight status were inconsistent (Table 3). Overweight and obese YA males were often significantly less likely to report any recreational and transportation activity compared to those at a normal weight. However, overweight female adolescents and obese male YAs were significantly more likely to report occupational activity than those at a normal weight. Underweight adolescents of either sex were less likely to perform any activity of any domain. However, underweight male adolescents were more likely to perform transportation activity compared to those at a normal weight.

Accounting for different combinations of physical activity domains, multivariate modeling of adherence to physical activity recommendations (Supplemental Table) showed that obese and severely obese adolescents and YAs tended to be less likely than normal weight peers to meet recommended levels of physical activity, though results were rarely significant. The most consistently significant associations were seen among YA males, in whom severe obesity was associated with lower adherence to recommendations across the different domain combinations examined compared to those of normal weight.

Discussion

Adolescents and YAs were physically active across recreational, occupational, and transportation domains. The proportion of adolescents and YAs meeting physical activity recommendations increased when activity domains beyond recreation were considered, most substantially when measures of occupational activity were added to recreational activity. The additional 12.3% of adolescents and 23.1% of YAs who met guidelines when accounting for occupational activity was higher than the additional 7.1% of 18–24 year-olds and 8.3% of 25–34 year-olds that met recommendations when accounting for occupational activity in a 2007 Behavioral Risk Factor Surveillance System analysis, perhaps reflecting a difference in how activity levels were assessed.⁷ Transportation activity, while accounting for a smaller proportion of total activity in adolescents and YAs, also increased the estimated proportion who would be considered adherent to physical activity recommendations.

Occupational activity represented a significant proportion of total physical activity among adolescents and YAs. Levels of occupational activity were most notable among YA males. Among the over half of YA males who reported any occupational activity, their average reported occupational activity was almost three hours per day. These findings may represent the recruitment of a young and new-entry male workforce to physically demanding jobs and domestic duties (e.g., construction, yardwork, etc.).

Occupational activity, however, was not associated with healthier weight status, and was the only activity domain associated with overweight and obesity among adolescents and YAs. Though causality has not been established, these findings suggest that the relationship of occupational activity with obesity and other health measures may differ from physical activity performed in other domains.⁸ In prior studies, occupational activity has not been strongly associated with decreased risk of diabetes or obesity, which is in contrast to studies demonstrating these health benefits from recreational activity.^{9,16,27} In addition, occupational activity has been linked with increased risk of long-term sickness absence among employed adults and decreased quality of life among male university students, while recreational activity was associated with lower absence rates and better quality of life.^{28,29}

Demographic and socioeconomic factors may affect the types of employment and domestic responsibilities held by adolescents and YAs, and thereby the amount of occupational physical activity performed. We stratified our analysis by sex and identified that males reported more occupational activity than females. Among men, high levels of occupational activity have been associated with increased mortality, with the reverse being true in women.⁸ Among high school students, part-time employment has been associated with increased MVPA in males, but with decreased MVPA in females.¹⁰ Though our analytic models controlled for several markers of socioeconomic status (e.g., family income, insurance status, race/ethnicity, educational attainment), prior studies have demonstrated a moderating effect of race/ethnicity, but not socioeconomic status, on factors influencing physical activity in children entering adolescence.³⁰ Better understanding the relationships between socioeconomic circumstances, occupational activity, and weight represents an important area for future work.

Beyond the surprising association of weight status and occupational activity, the relationships of weight status with recreational and transportation activity among adolescents and YAs were less clear with associations varied by age and sex. In prior studies, adolescents meeting recommended activity levels have had improved cardiorespiratory fitness, but not BMI.³¹ The relationships between activity performed in different domains with other health measures (e.g., blood pressure, insulin resistance) and among underweight youth (e.g., compulsive exercise seen in disordered eating) are areas for future research.

Our findings have important implications for how physical activity is measured among adolescents and YAs in interventional or public health studies, which often rely on physical activity self-report measures collected by survey. While some studies have used objectively measured physical activity with accelerometers or pedometers, the expense and adherence challenges preclude using these measures in many studies. The increasing availability of smartphone applications with pedometer functions may broaden the use of objective measures, though variability among tracking accuracy may limit their utility for research.³² In a study among overweight and obese YAs, objectively measured activity was found to correlate more strongly with self-reported recreational activity alone than with the total activity in all domains.³³ Among adults in several countries, the WHO Global Physical Activity Questionnaire used by NHANES has shown moderate to strong agreement with the predecessor International Physical Activity Questionnaire, but fair to moderate agreement with accelerometer-derived physical activity.^{34,35} While objective measures would be expected to more accurately and comprehensively capture activity across domains with stronger associations with health measures in prior studies,³⁶ distinguishing activity domains from accelerometer or smartphone activity data would not be possible without manual documentation. For example, participants would need to regularly record whether steps were taken for recreation, occupation, or transportation.

Among self-reported physical activity measures, most have not been well validated in adolescents and YAs, whose neurocognitive development (e.g., working memory, numeracy) may be relevant to their ability to recall physical activity over a 30-day period. For example, participants may have inadvertently over-reported minutes because of double-reporting activity as both vigorous and moderate activity³⁷ or for activities that could fit in multiple domains (e.g., walking for work; school/professional athletics). Alternate self-report methods include the 24-hour time use recall survey. Using this method, participants 15 and over in the American Time Use Survey (ATUS) reported a lower rate of performing any recreational physical activity (17.6%) in the last day compared to the teens or YAs asked about habitual recreational activity in the current analysis.³⁸ Occupational activity is difficult to compare between these two surveillance surveys because the ATUS records number of working hours, which are then categorized by average level of intensity, rather than querying the amount of occupational time spent at moderate or vigorous activity levels.³⁹ A comparison of various active transportation surveys, including NHANES and the ATUS, that use different activity constructs and reporting periods (e.g., past 24 hours, week, month) identified widely variable estimates.⁴⁰

Other limitations to the current study include that while many adolescents and YAs report no activity within a given domain, others report a feasible but high duration of daily activity in

that domain. Percentages of adolescents and YAs who performed any MVPA (rather than none) in a given domain were presented alongside mean durations among those who performed any MVPA, in order to contextualize these data. Respondents who reported an average of over 24 hours per day of activity were considered to have missing data in the published NHANES dataset. High durations below 24 hours were sometimes recorded. Finally, associations between weight status and activity domains do not denote causality due to the cross-sectional nature of the data used.

Accurate survey measures of physical activity are necessary to monitor activity among adolescents and YAs, as objective physical activity device trackers may not be feasible or provide sufficiently granular data on the types of activity in which youth are engaged. Our analyses demonstrate that the domains of physical activity measured in a survey can greatly influence estimates of physical activity and adherence to physical activity recommendations. A failure to comprehensively query the domains of physical activity could most strongly impact estimates for certain groups, such as YAs who accumulated substantial physical activity in occupational settings. Accurate adolescent and YA population-level estimates of physical activity and proportions meeting recommended levels of activity are needed to inform public health progress and priorities during these critical life stages that have implications for health behaviors and cardiometabolic health over the lifespan.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Abbreviations:

YA	young adult
MVPA	moderate-to-vigorous physical activity
AHA	American Heart Association
BMI	body mass index
NHANES	National Health and Nutrition Examination Survey
WHO	World Health Organization
ATUS	American Time Use Survey

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Implications and Contribution

Adolescents and young adults accumulate substantial occupational and transportation-related physical activity, resulting in more youth meeting activity recommendations when accounting for these activity domains versus recreation alone. Comprehensive activity estimates among adolescents and young adults when relying on self-reported activity questionnaires are needed to inform public health progress and priorities.

Fig 1.
Percent of adolescents and young adults adherent to age-appropriate physical activity recommendations, accounting for different activity domain combinations

Table 1:

Demographic characteristics of population

	n (actual)	n (extrapolated)	% (weighted)	95% CI
Total	11,157	8,251,591		
Sex				
Female	5,459	4,002,022	48.5	(47.3, 49.7)
Male	5,698	4,249,569	51.5	(50.3, 52.7)
Age group				
Adolescents 12–19	6,541	3,721,468	45.1	(43.3, 47.0)
Young adults 20–29	4,616	4,530,123	54.9	(53.0, 56.7)
Race/ethnicity				
Non-Hispanic White	3,465	4,719,910	57.2	(53.5, 61.0)
Non-Hispanic Black	2,660	1,138,720	13.8	(11.9, 16.0)
Mexican American	2,281	1,064,455	12.9	(10.8, 15.3)
Other Hispanic	1,271	610,618	7.4	(6.1, 8.8)
Other/Multi-Racial	1,480	726,140	8.8	(7.6, 10.1)
NHANES start year				
2007	2,034	1,625,563	19.7	(17.5, 22.0)
2009	2,291	1,633,815	19.8	(18.2, 21.6)
2011	2,236	1,650,318	20.0	(17.6, 22.7)
2013	2,345	1,658,570	20.1	(18.3, 22.1)
2015	2,251	1,675,073	20.3	(18.5, 22.3)

Total number of participants contributing data included in further analyses. Nationally representative percentages and 95% confidence intervals as calculated using Mobile Exam Center survey weights.

Table 2:

Domains of reported physical activity, by age group and sex

		Total		Adolescents 12–19 years		Young Adults 20–29 years	
		95% CI		95% CI		95% CI	
Both sexes	TOTAL (n)	(n=11,157)		(n=6,541)		(n=4,616)	
	Report any, %	88.6	(87.7, 89.5)	90.9	(90.0, 91.8)	86.7	(85.3, 88.0)
	Minutes/week, mean	1,506	(1,411, 1,600)	1,191	(1,092, 1,291)	1,819	(1,648, 1,989)
	Recreational						
	Report any, %	71.3	(69.8, 72.7)	78.8	(77.4, 80.1)	65.4	(63.0, 67.7)
	Minutes/week, mean	445	(414, 476)	492	(450, 534)	398	(357, 438)
	% of total, mean	50.5	(49.3, 51.8)	60.2	(58.6, 61.7)	42.5	(40.6, 44.4)
	Occupational						
	Report any, %	46.9	(45.4, 48.4)	42.9	(41.2, 44.6)	50.2	(48.0, 52.4)
	Minutes/week, mean	795	(715, 876)	485	(416, 555)	1,104	(943, 1,266)
	% of total, mean	32.4	(31.0, 33.8)	21.7	(20.5, 22.9)	41.3	(38.8, 43.9)
	Transportation						
	Report any, %	38.1	(35.8, 40.5)	42.9	(40.9, 45.0)	34.2	(30.7, 37.9)
	Minutes/week, mean	265	(244, 286)	214	(193, 235)	316	(283, 350)
	% of total, mean	17.1	(15.8, 18.3)	18.1	(16.8, 19.4)	16.2	(14.4, 18.0)
Male	TOTAL (n)	(n=5,698)		(n=3,360)		(n=2,338)	
	Report any, %	92.5	(91.6, 93.3)	94.3	(93.2, 95.3)	91.1	(89.7, 92.3)
	Minutes/week, mean	1,681	(1,560, 1,801)	1,338	(1,207, 1,469)	2,040	(1,828, 2,253)
	Recreational						
	Report any, %	76.3	(74.6, 77.9)	84.5	(82.6, 86.3)	69.7	(66.9, 72.5)
	Minutes/week, mean	492	(452, 532)	547	(491, 603)	434	(382, 487)
	% of total, mean	49.3	(47.7, 50.8)	60.0	(58.3, 61.7)	40.6	(37.9, 43.2)
	Occupational						
	Report any, %	53.2	(51.0, 55.3)	48.9	(46.2, 51.7)	56.5	(53.6, 59.4)
	Minutes/week, mean	919	(813, 1,025)	562	(466, 658)	1,293	(1,094, 1,492)
	% of total, mean	35.0	(33.0, 37.0)	23.2	(21.6, 24.7)	44.6	(41.1, 48.0)
	Transportation						
	Report any, %	41.8	(39.4, 44.3)	47.8	(45.6, 50.1)	37.1	(33.4, 40.9)
	Minutes/week, mean	270	(243, 297)	229	(201, 257)	313	(271, 355)
	% of total, mean	15.7	(14.6, 16.9)	16.8	(15.4, 18.2)	14.9	(13.1, 16.7)
Female	TOTAL (n)	(n=5,459)		(n=3,181)		(n=2,278)	
	Report any, %	84.5	(83.1, 85.8)	87.4	(86.0, 88.6)	82.1	(80.0, 84.0)
	Minutes/week, mean	1,209	(1,106, 1,311)	925	(818, 1,031)	1,468	(1,296, 1,639)
	Recreational						
	Report any, %	66.1	(64.0, 68.0)	72.8	(70.5, 74.9)	60.6	(57.7, 63.5)
	Minutes/week, mean	365	(332, 399)	393	(347, 439)	340	(288, 392)
	% of total, mean	52.0	(50.0, 54.0)	60.4	(57.9, 62.8)	44.8	(42.3, 47.3)
	Occupational						

	Total		Adolescents 12–19 years		Young Adults 20–29 years	
	95% CI		95% CI		95% CI	
Report any, %	40.3	(38.4, 42.2)	36.5	(34.5, 38.6)	43.3	(40.5, 46.2)
Minutes/week, mean	586	(502, 670)	345	(265, 425)	806	(648, 964)
% of total, mean	29.4	(27.6, 31.2)	20.1	(18.3, 21.8)	37.4	(34.6, 40.2)
Transportation						
Report any, %	34.1	(31.4, 37.0)	37.8	(35.0, 40.7)	31.2	(27.2, 35.5)
Minutes/week, mean	257	(223, 292)	187	(156, 218)	322	(268, 375)
% of total, mean	18.6	(16.9, 20.3)	19.5	(17.5, 21.6)	17.8	(15.4, 20.1)

Percent reporting any moderate-to-vigorous physical activity within each domain. Among those reporting any, mean minutes per week of moderate-to-vigorous physical activity within each domain (excluding zeros). Mean percent of individuals' total moderate-to-vigorous physical activity represented by each domain, among all participants included.

Table 3:
Adjusted odds of reporting any physical activity within each activity domain by weight status

	Recreational MVPA			Occupational MVPA			Transportation MVPA			Any MVPA		
	aOR	P	(95% CI)	aOR	P	(95% CI)	aOR	P	(95% CI)	aOR	P	(95% CI)
Adolescents (12–29 yrs)												
Males (<i>n</i>)												
Underweight (<i>130</i>)	0.54	0.03	(0.31, 0.93)	0.94	0.78	(0.60, 1.47)	2.07	0.003	(1.29, 3.31)	0.33	0.003	(0.16, 0.68)
Healthy (REF) (<i>1,937</i>)												
Overweight (<i>522</i>)	1.02	0.92	(0.67, 1.54)	1.30	0.07	(0.98, 1.72)	0.92	0.57	(0.70, 1.22)	0.60	0.15	(0.31, 1.19)
Obese (<i>394</i>)	0.71	0.05	(0.51, 1.00)	1.17	0.27	(0.88, 1.55)	1.00	0.98	(0.74, 1.34)	0.59	0.13	(0.30, 1.17)
Very Obese (<i>377</i>)	0.76	0.16	(0.53, 1.11)	1.12	0.40	(0.86, 1.47)	1.04	0.81	(0.77, 1.39)	0.43	0.002	(0.25, 0.72)
Females (<i>n</i>)												
Underweight (<i>78</i>)	0.46	0.01	(0.25, 0.85)	0.70	0.31	(0.35, 1.40)	0.80	0.55	(0.39, 1.65)	0.44	0.01	(0.23, 0.84)
Healthy (REF) (<i>1,765</i>)												
Overweight (<i>552</i>)	0.99	0.95	(0.72, 1.35)	1.35	0.04	(1.02, 1.79)	0.97	0.79	(0.75, 1.25)	0.91	0.64	(0.60, 1.37)
Obese (<i>400</i>)	0.92	0.61	(0.68, 1.25)	1.05	0.77	(0.77, 1.43)	1.13	0.49	(0.79, 1.62)	0.85	0.39	(0.58, 1.24)
Very Obese (<i>386</i>)	0.71	0.15	(0.44, 1.14)	0.99	0.96	(0.71, 1.38)	0.76	0.14	(0.53, 1.10)	0.58	0.07	(0.33, 1.05)
Young Adults (20–29 yrs)												
Males (<i>n</i>)												
Underweight (<i>59</i>)	0.79	0.55	(0.36, 1.75)	0.78	0.53	(0.36, 1.69)	1.12	0.81	(0.44, 2.84)	0.50	0.15	(0.19, 1.30)
Healthy (REF) (<i>943</i>)												
Overweight (<i>656</i>)	0.93	0.62	(0.69, 1.25)	1.14	0.37	(0.85, 1.53)	0.74	0.03	(0.56, 0.97)	1.01	0.98	(0.65, 1.57)
Obese (<i>496</i>)	0.60	0.003	(0.44, 0.84)	1.55	0.01	(1.10, 2.17)	0.63	0.009	(0.44, 0.89)	0.89	0.66	(0.51, 1.53)
Very Obese (<i>184</i>)	0.60	0.002	(0.43, 0.82)	1.08	0.68	(0.76, 1.52)	0.76	0.21	(0.49, 1.17)	0.56	0.03	(0.33, 0.96)
Females (<i>n</i>)												
Underweight (<i>90</i>)	0.50	0.06	(0.24, 1.04)	0.75	0.31	(0.43, 1.31)	0.89	0.71	(0.47, 1.67)	1.01	0.97	(0.51, 2.00)
Healthy (REF) (<i>876</i>)												
Overweight (<i>521</i>)	1.02	0.89	(0.73, 1.43)	0.84	0.27	(0.62, 1.14)	0.82	0.26	(0.59, 1.16)	0.88	0.50	(0.62, 1.27)
Obese (<i>538</i>)	1.03	0.86	(0.75, 1.42)	1.04	0.78	(0.77, 1.42)	0.97	0.86	(0.70, 1.35)	0.85	0.43	(0.57, 1.28)
Very Obese (<i>253</i>)	0.89	0.46	(0.64, 1.22)	1.30	0.15	(0.91, 1.85)	0.87	0.51	(0.58, 1.31)	0.95	0.77	(0.64, 1.39)

aOR: adjusted odds ratio. Logistic regression models control for age, race/ethnicity, family income, education status (among young adults), health insurance status, and survey cycle.